Johns Hopkins University

Department of Applied Economics

Course Number 440.640.51

Environmental and Resource Economics

Fall, 2012

Our economic and social systems are increasingly facing challenging questions regarding the protection of the environment, the management of natural resources and the achievement of economic progress that is in some sense “sustainable” given technological and natural constraints. Decision-makers express growing concern for these issues, though their approaches to them are not always consistent or well-directed. This course is founded on the conviction that economic reasoning has much to offer (though it is not a panacea) in addressing these challenges. This course is designed to provide the basic conceptual grounding for the use of economics to inform decisions regarding the proper use of the environment and natural resources.

Beginning with the concept of “sustainability”, the course develops a framework for an economic assessment of environmental problems including the notion of market failures, policy design issues associated with using alternative economic incentives and instruments such as pollution taxes, environmental subsidies and marketable tradable pollution permits, cost-benefit analysis as applied to environmental issues, and the valuation of environmental resources. The last portion of the course examines principles of the economically efficient management of renewable (e.g., fisheries, forests) and depletable (e.g., fossil fuels, natural ecosystems) resources, time permitting. A number of applied settings are used to demonstrate the principles taught in the course.

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The best way to contact me is via e-mail. I check it regularly.

Course Prerequisites. The prerequisite for this course is a graduate level course in microeconomic theory. The course material is presented using economic reasoning and graphical and mathematical analysis. Calculus will be used in the lecture materials. Some case studies involving econometric analysis and the use of spreadsheet tools will be examined in the context of the course.

Course Requirements. There will a mid-term and a final exam. The mid-term will be worth roughly 40% of the final grade. The final exam will be worth roughly 50% of the final grade. There will be homework in the form of problem sets throughout the course. The problem sets are worth 10% of the final grade.
Readings. The basic course texts are the Environmental Economics: In Theory and Practice, 2nd Edition, 2007, by N. Hanley, J. Shogren and B. White and Economics of Natural Resources and the Environment, 1990, by D. Pearce and R.K. Turner. Readings from various journals and working papers will be assigned throughout the course. Supplemental readings listed below may be required, time permitting.

SYLLABUS AND READINGS

1. Sustainable Development: An Economic Perspective

Pearce, D. and Turner, K., Chapter Two, The Circular Economy, pp. 29 - 42

Hanley et al., Chapter Two, The Economics of Sustainable Development, pp. 14 - 41

2. The Environmental Kuznets Curve


Case Study: Lead from Gasoline


THE ECONOMICS OF THE MANAGEMENT OF THE ENVIRONMENT

3. Economic Efficiency, Property Rights and Market Failures


Coasean Bargaining

Hanley et al, Chapter Three, Market Failure: Introduction (3.1) and Markets: Efficient or Otherwise (3.2), pp. 42 - 48

Externalities

Hanley et al., Chapter Three, Market Failure: Externalities (3.3), pp. 49 – 57

Supplemental Reading
Hanley et. al., Chapter Three, Market Failure: Non-convexities (3.6), pp. 65 - 67

Public Goods


Hanley et al., Chapter Three, Market Failure, Non-Rivalry and Public Goods (3.5), pp. 61 – 65 and Concluding Remarks, (3.8), pp. 75 - 79

4. Designing Pollution Reduction Strategies

Hanley et al., Chapter Four, Incentive Design, Introduction (4.1), pp. 82 - 85

“A Pollution Taxonomy”: Lecture Slides

Emission Charges

Hanley et al., Chapter Four, Incentive Design, Emissions Charges (4.2.1), pp. 85 – 88


Supplemental Reading

Pearce, D. and Turner, K., Chapter Six, Taxation and Optimal Pollution (6.1- 6.4), pp. 84 – 88

Pollution Reduction Subsidies

Hanley et al., Chapter Four, Incentive Design, Subsidies (4.2.4), pp. 97 – 100

Pearce, D. and Turner, K., Chapter Seven, Environmental Standards, Taxes and Subsidies, Pollution Reduction Subsidies (7.3), pp. 107 – 109


Marketable Tradable Permits
Pearce, D. and Turner, K., Chapter Eight, Marketable Pollution Permits (8.1-8.4), pp. 110 - 119

Hanley et al., Chapter Five, Incentive Design, Efficiency Properties of Tradable Pollution Permits (5.3), pp. 144 - 147

Case Study: Greenhouse Gas Emissions Trading


Pearce, D. and Turner, K., Chapter Six, Charges as a Low-Cost Solution to Standard Setting, (6.8), pp 94 – 96

Supplemental Reading

Hanley et al., Chapter Five, Incentive Design, Innovation and Cost Savings over Time, (5.6.1), pp. 162 – 164

Pearce, D. and Turner, K, Chapter Seven, Taxes Versus Standards (7.2), pp. 104 - 107

5. Benefit-Cost Analysis


Project-Based Discounting


OMB Guidance, Circular A-4, Regulatory Analysis, September, 2003, Discount Rates, p. 31 -37

Case Study

The Economics of Community-Based Wind Power Projects

Supplemental Reading


6. Benefits Assessment


Hanley et al., Chapter Twelve, The Theory and Methods for Environmental Valuation, The Divergence in Value Measures, (11.2.2), pp. 327 – 332


Hedonic Valuation Methodologies

Hanley et al., Chapter Twelve, Theory and Methods for Environmental Valuation, The Hedonic Pricing Method, (11.3.4), pp. 352 – 356


Contingent Valuation Methodologies


Value of a Live Saved


THE ECONOMICS OF RESOURCE MANAGEMENT

6. Renewable Resources
Tietenberg, T., Chapter Fourteen, Common-Pool Resources; Fisheries and Other Commercially Valuable Species

“Scientists Say Cod are Scant; Nets Say Otherwise”, New York Times, December, 2011

Supplemental Reading

Game Theory

Hanley et al., Chapter Three, Market Failure, Non-exclusion and the Commons, (3.4), pp. 57 – 61

7. Nonrenewable and Depletable Resources

Tietenberg, T., Chapter Seven, The Allocation of Depletable and Renewable Resources

Tietenberg, T., Chapter Five, Dynamic Efficiency and Sustainable Development, The Two Period Model, pp. 92 – 97


Supplemental Reading